

Memorandum

Date: April 9, 2008

To: Patrick Morris
Senior Water Quality Control Engineer
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, California 95670

From: Department of Water Resources

Subject: Comments on the Delta Methylmercury TMDL:
February 2008 Draft Staff Reports

Enclosed for your consideration are the Department of Water Resources' (DWR) comments on the February 2008 Draft Staff Report (Staff Report) regarding the proposed Basin Plan Amendment (BPA) for the Control of Methylmercury in the Sacramento-San Joaquin Delta Estuary. DWR appreciates the opportunity to review and comment on this report.

DWR has three major issues that it would like to bring to the attention of the Central Valley Regional Water Quality Control Board (Regional Board). First, DWR is unsure that the responsibility given to it in the proposed implementation plan matches with DWR's actual authority. In many cases, DWR plays only a modest role in changing flood management in ways that affect the Cache Creek Settling Basin (CCSB), Yolo Bypass and the Delta. Second, DWR must operate its facilities in accordance with the terms and conditions of its permits and licenses, and the fishery flow requirements determined by other agencies. It is unclear how the proposed methylmercury allocations and standard will be balanced with the existing requirements. Finally, as noted by peer reviewer, Dr. Alex Horne, the proposed BPA may seriously curtail restoration of wetlands in the Delta and, therefore, conflict with efforts to restore endemic species.

1. Properly assign responsibility

In almost all cases, DWR plays a modest role in changing flood management in ways that affect the CCSB, Yolo Bypass or Delta. DWR does not own any land in the CCSB and is not responsible for deciding how the CCSB will be operated. Additionally, DWR owns only a small fraction of land in the Yolo Bypass and controls only a single reservoir that influences discharges to it. DWR's principal role is to maintain some of the Bypass' levees and weirs discharging to it.

In addition, although DWR has an important role in helping local reclamation districts in the financing of levee improvements, DWR has a limited role in managing these lands. Therefore, DWR believes that there is little basis for assigning responsibility to DWR for assessing impacts that occur when these lands are inundated by floods, and to take certain actions to regulate floods which are largely under the control of other agencies.

For example, operating rules for flood control are established by the federal government.

2. Methylmercury allocations and control actions need to be balanced with other requirements imposed on DWR

DWR must operate its facilities in accordance with the terms and conditions of its water permits and licenses, and the fishery flow requirements determined by other agencies. It is possible that in attempting to meet the proposed methylmercury allocations and incorporate control actions, DWR will be unable to also meet its existing requirements. In light of potential conflict, it is unclear how the proposed methylmercury allocations and control actions are to be balanced with these existing requirements.

While the Staff Report does acknowledge a potential conflict in the context of sulfate standards (EC standards), it does not discuss how other conflicts with existing regulatory requirements in the Delta will be, or could be, resolved.

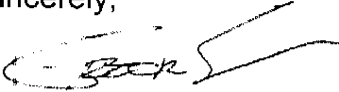
3. The proposed Basin Plan Amendment and implementation plan could seriously limit the ability to help with the recovery of endangered or threatened species in the Delta.

The proposed BPA and implementation plan could seriously curtail agencies' ability to help with the recovery of endemic and specially protected species by limiting projects that could restore wetland habitat and provide seasonal food sources for such species. A concern is that the reduction of food sources at certain times of the year may be contributing to the current pelagic organism decline. For example, one proposal to enhance delta smelt recovery is to divert water down the Yolo Bypass through the toe drain during the summer to move the Cache Slough primary productivity (zooplankton) into the Delta. However, as proposed by the BPA and implementation plan, this proposed increase inundation of the Yolo Bypass may not be allowed or might be limited due to methylmercury concerns. Therefore, the proposed mercury TMDL may conflict with and limit agency actions intended to benefit listed species and their habitat.

In sum, DWR does not believe that there is enough information available for the Regional Board to reasonably adopt the proposed BPA and implementation plan. Currently, it is unclear who is, and who should be, held responsible for the methylmercury loading in the Delta. Also, it is unclear how the existing water quality and flow requirements, and the operations necessary to meet those requirements, will be balanced with the new methylmercury allocations and future control actions. Lastly, it is unclear how much restored wetland habitat and seasonal food sources are needed to protect and restore endangered species, such as the delta smelt, and how the restoration of that habitat and food sources will be limited by the proposed BPA and implementation plan. Thus, given the above concerns, DWR requests that the Regional Board not adopt the proposed BPA and implementation plan at this time.

DWR is willing to work with the Regional Board and its staff to develop alternative approaches to addressing methyl mercury in the BPA. If you have any questions please contact me at 916-653-8826.

Sincerely,

A handwritten signature in black ink, appearing to read "Erick Soderlund", with a long, sweeping horizontal line extending to the right.

Erick Soderlund, Staff Counsel
Department of Water Resources

Attachment(s)

**Department of Water Resources Comments on
Central Valley Regional Water Quality Control Board
Draft Basin Plan Amendment for the
Control of Methyl and Total Mercury in the Delta**

April 9, 2008

General Comments

Comment # GC1 DWR recognizes positive changes in the Feb 2008 BPA. DWR appreciates your response to some of our comments to the 2006 draft BPA; many changes are evident. CVRWQCB staff's work toward creation of a Technical Advisory Committee, the greater level of detail on proposed characterization and control studies, and inclusion of cost estimates for studies and other proposed actions are all improvements. The Feb 2008 BPA includes improved consideration of potential conflicts between operations to improve the environment by managing for habitat and food chain relationships and operations to improve the environment by minimizing methylmercury. In addition, inclusion of language such as "to the extent practicable," and the statement that "[t]he Central Valley Water Board will employ an adaptive management approach to implementing Phase 1 of the program and developing actions for Phases 2 and 3, incorporating new data and scientific information," illustrate an intent to act reasonably while pursuing water quality goals.

Some of the comments that follow are new, and others are repeat requests that DWR hopes will be reconsidered. DWR appreciates the Central Valley Water Board's commitment to collaborating with agencies and institutions to ensure its projects attain and include appropriate management practices and mitigation measure to achieve Basin Plan amendment requirements.

Comment # GC2 There is an apparent, inappropriate shift in responsibility from mine owners to other parties. Assign responsibility appropriately. [p. 91, p. C-59] "Even in the absence of a Delta mercury control program, mine owners are responsible for discharges from their property. In this context, the Delta mercury control program will not pose new economic costs or environmental impacts to address discharges from mercury and gold mines."

Although it is stated that no "new" costs are posed, the Feb 2008 BPA does impose the costs on new and inappropriate parties. The emphasis on DWR's role in many sections seems misplaced and instead should be focused on land use and upper watershed actions to minimize sediment loading to streams and rivers.

Comment # GC3 Where joint responsibility exists, apportion it equitably.

In many instances, joint responsibility is assigned (e.g., USBR and DWR, the former Reclamation Board and DWR, DWR and private landowners), but no apportionment of responsibility is provided, effectively penalizing the more motivated party named. The Basin Plan amendment should appropriately assign proportional responsibility.

Comment # GC4 The proposed BPA seems to punish DWR for changing climate patterns.

Climate change will necessarily affect water supply and flood management. [TMDL Section 8.4.3.4 p.173] "Recent studies indicate that global warming may disrupt traditional weather and run-off patterns and increase the frequency and severity of summer droughts and springtime flooding..."

It is neither reasonable to penalize DWR for changes in flood conditions and typical Delta conditions due to modified hydrology, nor to penalize DWR for actively modifying flood management and supply operations to adapt to modified hydrology. Please remove requirements to evaluate and minimize mercury effects of changes in water management.

Comment # GC5 Clarify whether Characterization and Control studies are really optional.

[p. BPA-3, paragraph 4] The Feb 2008 BPA states that meHg and total Hg characterization and control studies are required, and that individual or collaborative efforts are allowed. It then states that if no acceptable studies are undertaken, Phase 1 limits (0.06ng/L for meHg in water column), will remain in effect at the end of Phase 1.

It is confusing that bulleted items between paragraphs 4 and 5 are "required" as stated in paragraph 4, yet it is also stated that at if "required dischargers" choose to not implement characterization and control studies, they can just settle for the 0.06 ng/L limit. Is the implication that Phase 1 limits are not attainable without characterization and control studies, and that characterization and control studies are the vehicle to alter the initial limits?

Comment # GC6 Provide a waiver clause for *de minimis*, and time-critical flood protection projects.

Explicit waivers for *de minimis* projects, and projects essential to protecting human health and property should be included in the Basin Plan Amendment. This TMDL would require significant resources to be expended for studies of even the smallest of projects, which would take resources (such as time and money) away from efforts to remove mercury from the system. Some small projects protect human health and property and should not be compromised by initiating studies on potential impacts that are likely to be insignificant.

DWR has a responsibility and obligation to maintain the Sacramento River Flood Control System so that it can pass design flood flows. Consequently, DWR is

always involved in maintenance projects to meet this obligation. Existing projects, maintenance and repair efforts that do not change the system, but restore it to its design functionality should not be subject to requirements for Characterization and Control Studies.

Examples of projects expected to have insignificant effects for which no formal modeling nor characterization and control studies should be required include:

- Fish passage projects or other projects which alter flow at a rate of tens or hundreds of cfs, rather than the thousands of cfs needed to alter Yolo Bypass inundation and inundation-related processes significantly;
- Levee maintenance and repair efforts that do not change the system but restore it to its design functionality;
- Small levee changes or small setbacks of levee alignments;
- Reoperation of reservoirs to better manage dangerous, large-but-infrequent storms (50 year events—200 year events); how could effects possibly be predicted?
- Minimal “small project” dredging defined by volume, for example
- Changes due to natural events such as the natural process of erosion of stream banks

Comment # GC7 Prevent study design and review from substantially delaying other projects.

[p.BPA-4] “Dischargers, discharger groups, or entities representing dischargers, shall submit Characterization and Control Studies work plans ... to Regional Water Board staff for approval by the Executive Officer... The TAC may review the work plans and provide input indicating whether the studies are likely to characterize methylmercury production and control. Staff will review the work plans, including recommendations of the TAC, and report to the Regional Water Board on whether satisfactory progress is being made.”

Just as the Feb 2008 BPA specifies when work plans must be submitted for review, it should also specify when review will be completed. There should be an explicit means to prevent delay of projects that are planned to be constructed in near future (e.g. new salvaged fish release sites, South Delta Improvement Project, Franks Tract Project, and Delta Cross Channel Re-operations, riparian and wetland restoration and gravel injection activities proposed during Oroville relicense implementation). Some projects might be able to incorporate new mercury study requirements, but others, such as Oroville relicense activities, are scheduled to be implemented during a relatively short window of time following DWR’s acceptance of the new License from FERC.

One solution might be to consider approved, comprehensive characterization and control studies aimed to detect consequences of near-term projects to be sufficient for compliance. However, it will likely be difficult, even project by project, to design studies to definitively establish cause-effect relationships in the Delta.

Comment # GC8 Specify the level of support sufficient to indemnify major regulated parties such as DWR.

Although CVRWQCB staff provided cost estimates in Appendix C, in many cases it is not clear what entity will bear these costs. It is also somewhat ambiguous who should carry out actual activities.

[p.101, penultimate paragraph] "In addition, if funding is available, [CVRWQCB?] staff could conduct studies to evaluate the effects of water management, flood conveyance and salinity control projects on ambient methylmercury levels in the Delta."

Would this be in addition to, or in lieu of study requirements proposed to be placed on DWR? Is DWR offered a choice between establishing a new Mercury Program and providing funding to the CVRWQCB to perform the studies they deem appropriate?

Absent this potential option, under the Feb 2008 BPA, DWR, a large agency with many functions and many potential projects, would be required to establish a new Mercury Program to manage mercury requirements on an ongoing basis, with an annual budget in the tens of millions. While some studies are already underway, such as those associated with FERC relicensing, many more are called for in the Feb 2008 BPA. Given interconnectedness of the system, and the state of understanding of mercury processes, it would be exceedingly difficult to accurately predict or attribute the effects of many individual projects. This tends to suggest a comprehensive study approach, rather than a project-by-project approach for DWR. Still, there are no guarantees that the example studies on which the Central Valley Regional Water Quality Control Board based its cost calculations will explain, or point to management solutions for, system wide mercury issues that may *or may not be* linked to DWR activities. Thus a level of support sufficient to indicate good faith participation – whether implemented in-house or contracted to the CVRWQCB should be specified.

Comment # GC9 Devote sufficient time and resources to science-based study design to have strong probability of meeting study goals.

Criteria for study acceptability should be flexible depending on the project type, site, type of discharge, and level of increase etc. To ensure that studies are appropriate, the TAC should be well integrated in determining study plan acceptability. Significant effort and funding could be spent, and projects could be delayed in an attempt to meet undefined expectations. The basin plan amendment should more explicitly define the role of the TAC. That role should include more involvement in study design, and more time for interaction with those who propose characterization and control studies (see next comment).

Comment # GC10 Characterize variability in baseline conditions before setting limits.

[TMDL p.171 end of Section 8.4.1] “Future monitoring programs will accommodate long-term interannual variability by evaluating whether sources are meeting allocations on a multi-year basis.”

There is recognition that conditions at a site are likely to change with water year as well as by season. It is not reasonable to set limits on ambient nor discharged mercury levels where insufficient information about baseline conditions exists. Characterization and control studies, as well as compliance monitoring, should be of sufficient duration to capture this variability. It is not clear that these timescales are built into either in the proposed schedule.

Comment # GC11 Extend Phase 1 to allow more time for the TAC to guide study design.

Page BPA-4 describes the timeline for studies:

“...1. By [one year after the effective date of this amendment] (anticipated mid-2009) each discharger, or entities representing dischargers, shall provide to the Regional Water Board staff a report that describes how individual dischargers or groups of dischargers or coalitions will implement the Characterization and Control Studies...

...2. [they] shall submit Characterization and Control Studies work plans by [two years after the effective date of this amendment] (anticipated mid-2010)...plans will contain a general description of all the studies that need to be done... and a detailed work plan for the initial work to be accomplished in the following two years...”

[p. C-73, C-74] Figure C.2 shows hypothetical timeline for study development and technical advisory committee review

The timeline for designing studies should be extended by a year or more. In particular, the expectation that a part-time committee could turn around substantive reviews for the *multiple* studies proposed to be required of *multiple* parties seems unrealistic.

The CVRWQCB staff has done an admirable job of thinking out and providing skeleton descriptions of some of the studies they envision, via the cost estimate section in Appendix C. These examples give readers an idea of what the staff had in mind for some studies. Others – particularly those related to shifts in operations – seem difficult for the staff or readers to envision. Given the complexity and interconnectedness of the system, the TAC may similarly struggle in advising how to design studies to not only detect change, but accurately assess causation.

Comment # GC12 Extend Phase 1 to allow time to secure resources.

It may not be feasible to meet the Draft Basin Plan Amendment timeline for study planning and initiation given the State and agency budget process. It appears a substantial effort will be required to fund and organize collaboration, monitoring,

and studies. While it may be possible to build new study requirements into some project budgets, if the full breadth of possible changes to water management requires study, it is likely a new Mercury Program will need to be created at DWR.

The state's budget process alone requires at least two years to secure funds and staffing, beginning with the Budget Change Process in the spring of each year, for funding and positions to possibly be available two years later. With a BCP, funding and staffing are not guaranteed. Whether studies were performed by DWR staff or contracted out to others, four additional years may be required to move from successful funding to implementation of studies on the ground. This is consistent with recent timelines for pre-funded CALFED mercury studies to move from the Proposal Solicitation Package stage to fund disbursement and study implementation. This is also consistent with the time frame for initiation and implementation of a new DWR program.

A more realistic schedule might be:

Year 1

- Skeleton staff forms study coalitions
- Skeleton staff plans staffing structure, applies for funding and staff
- Technical Advisory Committee (TAC) forms

Year 2

- Skeleton staff drafts study plans
- Technical Advisory Committee gains local background to guide study plan design

Year 3

- Qualified staff and funding secured
- TAC reviews study plans
- Dischargers revise study plans

Year 4

- TAC reviews study plans
- Contract for studies

Year 5

- Initial studies year 1

Year 6

- Initial studies year 2

Year 7

- Preliminary results of first two years initial studies, proposals for additional studies
- Some initial studies continue year 3

Year 8

- Additional studies year 1
- Some initial studies continue year 4

Year 9

- Additional studies year 2

- Some initial studies continue year 5

Year 10

- Additional studies year 3
- Some initial studies continue year 6

Year 11

- Complete studies, submit final report to Regional Water Board staff

Comment # GC13 CCSB feasibility is inaccurately cast. Remove implementation action requirement from Phase 1.

See CCSB section for full details.

Comment # GC14 Extend Phase 1, approve Phase 2 separately

We suggest that Phase 1 be extended for the above reasons, and that Phase 2 be proposed as a separate Basin Plan Amendment when there is sufficient information to more concretely determine measures, impacts, and realistic timelines for Phase 2 activities. [p. 168] "Many of the potential Phase 2 control actions are more speculative because the proposed Phase 1 methylmercury characterization and control studies are needed to further develop and evaluate the feasibility and efficacy of methylmercury management practices to be implemented in Phase 2." Uncertainty about approval of an offset program [p.171 and elsewhere] also points toward passing Phase 2 language when better information is available.

For example, it should be noted that the timeframe for Phase 1 is listed in the executive summary of the Feb 2008 BPA (p. ES-5) as running from 2008 to 2015, while in Chapter 4, Program Implementation, it is listed as running from about 2009 to 2016 (p.115 for example)

This is especially appropriate since "[t]he environmental effects of new control options will be evaluated during future Basin Planning efforts at the end of Phase 1," and "[u]ntil the proposed Phase 1 characterization and control studies have been completed, it is not possible to know whether wetlands that act as a substantial source of methylmercury to the Yolo Bypass also act as critical habitat for endemic species, and whether it will be possible to mitigate any potential impact to less than significant levels." (Feb 2008 BPA, pg 186.)

Comment # GC15 Apply limits and credits consistently

Consider using a process-based approach for assigning credits and liabilities with respect to mercury. A process-based approach might be expected to offer credits for dredging, for the removal of mercury from wetted exposure. A process-based approach might also reward, rather than penalize, reservoir operation since reservoirs trap the vast majority of incoming sediment loads. For example, acting essentially as sinks for total mercury loads, is it possible that Lake Oroville, and/or the Thermalito complex be considered by the Board as beneficial to the Delta TMDL program by providing a net reduction in total mercury loads to the Lower Feather River from the numerous point-source mine

sites located in the upper watershed upstream from Lake Oroville. Water quality study performed for the FERC Relicensing effort showed that total and methylmercury levels in Lake Oroville were low when compared to results from locations sampled in the Feather River downstream from Oroville Dam. Would DWR thus be eligible for offset credits as described in BPA-13?

Agriculture, Wetlands, and the ESA

Comment # A&W1 Assertion that impacts on wetlands *can be* reduced to less than significant levels is unfounded

[p.175] "In general, the implementation of specific methylmercury and total mercury control projects is expected to result in less than significant levels of habitat loss if projects are carefully designed, constructed, and maintained in accordance with the above-mentioned regulations and any required mitigation measures." The above statement addresses the loss of existing wetlands, but does not address the loss of existing wetland function, or prevention of new wetland restoration believed essential to the survival of endangered species.

[p.189] "The proposed Basin Plan amendments do not conflict with provisions of adopted Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) because they do not prevent the future restoration and development of wetlands and other critical habitat, and... impacts to existing habitats **can be reduced** to less than significant levels through careful project design and construction activities." (emphasis added)

The assertion that impacts *can be* reduced to less than significant levels is unfounded based on current levels of scientific understanding about both mercury and ecology. Suggested rewrite: It may be possible to reduce impacts through careful project design and construction activities

Comment # A&W2 Define 'substantial sources'

[p.210] "...It is anticipated that methylmercury management practices would be implemented only at those wetland sites that act as **substantial** (emphasis added) sources of methylmercury to those Delta/Yolo Bypass subareas, and that only a fraction of those, if any, would require the implementation of methylmercury management practices that have the potential to result in unavoidable impacts to habitat sites that support an endemic species." What is the basis for defining substantial sources? Is the definition subject to obtaining additional information? The data and process for defining substantial sources should be subject to public comment.

Comment # A&W3 Resolve near-certain ESA and TMDL conflict

[p.182] "Research conducted in the Delta and elsewhere has found that seasonally and permanently flooded wetlands are efficient sites for methylmercury production and that wetlands could act as a potentially substantial methylmercury source to the Delta (see Chapters 3 and 6 in the TMDL Report). As a result, the proposed Project includes the requirements for Phase 1 characterization and control studies to evaluate feasible methods to address methylmercury produced by permanent and seasonal wetlands in the Delta region, for existing managed wetlands in the Delta/Yolo Bypass that act as a methylmercury source to reduce their methylmercury discharges during Phase 2,

and for new wetland restoration projects to minimize their methylmercury discharges.”

[p.183] “...recent studies suggest episodically flooded wetlands produce more methylmercury than permanently flooded wetlands...”

A large body of completed ecological research (see http://iep.water.ca.gov/AES/aes_publications.htm) shows the importance of seasonal wetland in the Yolo Bypass for native fish.

[p.75 TMDL] One of the possible contributors to the decline of delta smelt is a reduction of its food source at certain times of the year. Cache Slough is a highly productive area, and one proposal to enhance delta smelt recovery is to divert water down the Yolo Bypass through the toe drain during the summer to move the Cache Slough primary productivity (and zooplankton—delta smelt food) down into the Delta. This could also possibly benefit splittail and juvenile green sturgeon as the Yolo Bypass is rich in benthic macroinvertebrates.

Unless additional mercury study exonerates large portions of the Yolo Bypass that could be managed for flood, fish, and methylmercury conditions, or cleanup activities ameliorate the mercury problem rapidly, the proposed mercury TMDL very likely conflicts with the federal and state endangered species acts.

Comment # A&W4 Proposed mitigation methods for potentially significant impacts to wetland habitats and endangered species sidestep issue.

Address protection for ESA species directly.

Possibilities for working through scenarios are described in the Feb 2008 BPA [p. 105, p.184, p.209-211 and elsewhere]. The subsequent five comments address the five possible mitigation methods listed below. The below is a composite of options offered in different parts of the Feb 2008 BPA; not all are present in each pertinent section.

The CVRWQCB staff environmental analysis determined that the implementation of the proposed Basin Plan amendments could result in potentially significant impacts to wetland habitats and species unless mitigation is incorporated.

Possible mitigation methods include

1. Implement only those onsite methylmercury management practices that do not change desirable wetland functions
2. If implementation of onsite management practices is not adequate to achieve the subarea methylmercury allocation, participate in an offset program (if one is approved)
3. Focus implementation of management practices on wetland habitats that do not support endemic species with a limited geographic range,
4. Reduce upstream methylmercury sources and/or sources of mercury-contaminated sediment that supply the wetland sites; and,

5. For new habitat restoration projects, locate new wetlands away from mercury contaminated watersheds

Addressing offered possible mitigation methods:

Comment # A&W 4-1 In the context of the food web and multi-species effects, wetland function is not so well understood that one can necessarily predict loss of desirable wetland functions

Comment # A&W 4-2 Unless an offset program is developed during Phase 1 and approved this will not be a viable alternative. If an offset program is developed, it will likely be through the efforts of regulated water treatment facility agents, and will not be at a scale sufficient to serve possible State needs for offsets. In addition, the Feb 2008 BPA mandates cleanup actions on the part of DWR that could otherwise be considered to provide offsets.

Comment # A&W 4-3 High-priority habitat restoration is targeted toward endemic species with a limited geographic range.

Consider specifically exempting known high-priority restoration areas from alternate management for mercury

Comment # A&W 4-4 Upstream sources, not downstream habitats, should be responsible for source-reductions

Reducing upstream methylmercury sources may ultimately achieve the joint goal of suitable non-toxic, ecologically valuable habitat – and many upstream source reductions are proposed - but restoration should not have to wait until mercury goals are achieved.

Comment # A&W 4-5 High-priority habitat restoration areas overlap strongly with high-priority mercury areas.

Given the strong overlap of potential restoration sites and mercury management-targeted areas, it seems unlikely that substantial suitable area of potential habitats could be identified away from mercury-contaminated watersheds. If it is unavoidable that critical habitats for listed endemic species promote mercury methylation, preventing restoration of those habitats is an unacceptable resolution to the conflict. Consider specifically exempting known high-priority restoration areas from alternate management for mercury

Comment # A&W5 Confining the extent of wetland restoration sites is not realistic in the Yolo Bypass

[p.183] "...new wetland restoration projects may have the opportunity to consider their location, not create new wetlands directly downstream sources of mercury-contaminated sediment." This issue crosses the boundaries of wetland and flood management concerns. It may be possible to avoid creating new, managed wetlands downstream of mercury sources, but this flexibility does not exist in

overall management of the timing and extent of flooding throughout the Yolo Bypass, which is part of the larger Sacramento Flood Control System.

Comment # A&W6 Describe pre-project monitoring required if site is dry

[p.98, last paragraph] "Site-specific monitoring could include seasonal monitoring of methyl and total mercury concentrations in surface sediment and water at the restoration site for one year before the restoration activities take place, and two years after restoration activities are completed." In some instances, site-specific monitoring prior to restoration may not be possible. Please describe what should be done if a restored site is dry before restoration occurs.

Comment # A&W7 Commit to re-allocation if needed to protect ESA species' habitat

[p.184] "If no technically valid and legally defensible offset program can be developed...then the Central Valley Water Board could adjust the allocation strategy so that greater reductions were required from other methylmercury source types...Some existing managed wetland sites and proposed restoration projects may need to modify their management practices to avoid becoming an attractive nuisance, even if such modifications alter the function of the habitat." Please restate the *possibility* of modification as a *commitment* to adjusting the allocation strategy if needed to protect ESA species' habitat.

Comment # A&W8 Include current information on recent, remaining delta smelt distribution and life history processes.

The importance of the lower Yolo Bypass for Delta smelt appears to be downplayed. [p.185] "Delta smelt is a State- and federally-listed threatened species that is endemic to the upper Bay-Delta Estuary, principally Suisun Bay and the western Delta, primarily below Isleton on the Sacramento River side and below Mossdale on the San Joaquin River side (Moyle, 2002). Only the eastern-most range of the Delta smelt occurs in the Sacramento, Yolo Bypass and San Joaquin subareas where methylmercury source reductions are needed and methylmercury management practice likely to be implemented... most seasonal wet land acreage in the Delta/Yolo – where methylmercury management practices may most likely be needed – occurs upstream of the Delta smelt's range."

The above appears to downplay the importance of the Yolo Bypass for Delta smelt, when the wetlands upstream of the delta smelt range are believed to provide essential contributions to the food web on which the delta smelt relies. In recent times, the Cache Slough area has been one of the few areas where delta smelt have been detected. DWR requests a greater recognition of the interconnectedness of the system and the inclusion of current information on the species distribution and processes. The Cache Slough area is considered to be an important refuge habitat for the delta smelt. Data indicates the CSC has been a heavily used spawning area for at least 20 years. Even in the midst of a six-year drought the area saw relatively large numbers of spawning delta smelt.

Also, according to the Pelagic Fish Action Plan (March 2007), in 1999 and 2004, delta smelt in Cache Slough experienced higher growth than in other locations. Another possible reference is the DRERIP model for delta smelt.

Comment # A&W9 Describe alternate water management practices that address the same goals as buffer strips and constructed wetlands

[p.171] "...Some water quality management practices such as buffer strips and constructed wetlands may need to be evaluated and, if needed, modified or limited to reduce or at least not increase methylmercury production. However, there are other water management practices available that address the same goals as buffer strips and constructed wetlands."

Please explain. What other practices address the same multipurpose goals as buffer strips and constructed wetlands (e.g. multi-species habitat?)

Comment # A&W10 Clarify respective landowner and irrigator responsibility

DWR owns farmland (e.g. Sherman Island, Twitchell Island, Grizzly Island, Mokelumne/Cosumnes) and intends to partner to help restore wetlands (e.g. Yolo Bypass). If land is leased for agriculture, who is responsible for potential methylmercury discharge, the irrigator or the land owner? Some provision for *de minimis* exemptions would be appropriate, especially for small acreages, or "passively managed" lands.

Flood System Management

Comment # F1 The requirement to evaluate and minimize mercury effects of changes in flood system management presupposes an ability to predict mercury effects.

[p.182] “The proposed Project requires that agencies that propose changes to the Yolo Bypass flood conveyance evaluate and minimize new methyl and total mercury inputs resulting from the changes Potential implementation options to minimize methylmercury production in the Yolo Bypass flood control system could include

- Modifying the flow regimes within the Yolo Bypass
- Modifying the channel geometry to route more water down the eastern side where sediment is less contaminated by mercury; and
- Removing mercury contaminated sediment from within the Yolo Bypass downstream of the Cache and Putah Creek watersheds.”

Based on the information available to date in the Feb 2008 TMDL, mercury processes are sufficiently variable that it would be very difficult to predict in advance how changes in flood system management would affect mercury transport and methylmercury production in the Yolo Bypass and Delta. In addition, if an initial purpose of a project were to modify the flow regimes within the Yolo Bypass (for flood safety, ecological improvement, etc.) modifying the flow regime for mercury management could significantly impair the project.

Comment # F2 Make an exception to requirements to “complete characterization and control studies and develop and implement control actions prior to project completion” for flood control projects, lest studies compromise public safety.

The Feb 2008 BPA requires responsible agencies that propose new flood conveyance projects or changes to existing flood conveyance projects to complete Characterization and Control Studies prior to project completion and develop and implement control actions to minimize any potential increase in methylmercury or total mercury levels. These requirements will make it more difficult for DWR to meet its obligation to provide flood protection and may delay important projects to improve public safety. Also, the additional cost of conducting these studies and management plans will detract from the local and state funds available to improve flood protection and conveyance.

Comment # F3 Concentrating flow along the eastern side of the Yolo Bypass is unlikely to be effective as a mitigation measure.

[p.C-45, second bullet] A suggested methylmercury management practice for Yolo Bypass flood conveyance is: “Modification of the channel geometry to route more water down the eastern side of the bypass (away from sediment inputs from the Cache and Putah Creek watersheds)”

This concept appears to be inspired by a well known aerial photograph of “banding” that occurs as water from different tributaries flows through the Yolo Bypass. However, increasing the capacity of the low flow channel along the eastern edge of Yolo Bypass would likely be ineffective in reducing methylmercury because:

1. At high flows, increasing the capacity of the eastern Yolo Bypass, concentrating Sacramento River water along the eastern edge, would simply draw Cache and Putah Creek water (and contaminated sediment) further east as well, expanding the band of westerly, contaminated source water eastward.
2. At low flows, and as the Yolo Bypass drains, Cache and Putah Creek waters already drain to the low flow channel. This suggests that the low flow channel would contain sediment from Cache and Putah creeks in either configuration.

In addition, more rapid drainage of the Yolo Bypass is undesirable ecologically.

Water Supply Management, Tributary Watersheds

Comment # WS1 Accommodate DWR's FERC relicensing commitments by allowing mercury-related studies arranged pre-BPA to be considered equivalent to characterization studies

DWR's new 50-year license from the Federal Energy Regulatory Commission for the Oroville Facilities operation included many requirements for the benefit for the threatened spring-run Chinook and steelhead. Recognizing that gold mining tailings, the available source of gravels for actions such as: gravel augmentation, in-stream channel construction, and re-configuration of river banks to restore floodplain function, etc. would raise the issue of mercury containment, some mercury sampling was performed. Many of the pond and adjacent Feather River locations sampled for total mercury and methylmercury in the water column for the SP-W1 study report in support of relicensing effort had methylmercury levels that exceed the proposed 0.06 ng/L goal proposed by the Feb 2008 BPA. (DWR. 2004g. SP-W1: Project effects on water quality designated beneficial uses for surface waters. Final Report. Oroville Facilities Relicensing FERC Project No. 2100. California Department of Water Resources, Sacramento, CA. September 2004. SP-W1 PDF)

DWR will be required to implement restoration actions as dictated by FERC deadlines, and therefore requests that those studies performed and planned in association with the FERC agreement be considered a sufficient contribution to characterization and control study in the area. Short of this, DWR requests alternate accommodation (e.g., degree of study, extent of study, timeline for study) from the CVRQCB to ensure that new monitoring and analysis in the planning and construction phases of these projects do not hold up prior DWR commitments. Suggested language: "If time to project completion allows, complete pre-project monitoring will be performed as described in the Basin Plan Amendment."

Comment # WS2 Clarify whether major reservoir operations fall under this Feb 2008 BPA, or subsequent watershed BPAs.

It is ambiguous whether major reservoir operations fall under this Feb 2008 BPA, or subsequent watershed BPAs. Please clarify: if "The Delta and its tributary watersheds downstream of major dams" [used throughout Feb 2008 BPA] describes the geographical extent of the Basin Plan Amendments, is this inclusive or exclusive of management of those major dams? The Feb 2008 BPA appears to address reservoir operations in some areas, such as water and flood management, but not others. For example, DWR's Oroville facilities are not currently required to operate under a NPDES Waste Discharge Permit. However, the new 401 permit to be issued by the State Board for the Project will likely change this fact by requiring DWR to operate the Oroville Facilities as a NPDES waste discharger under the new license.

Comment # WS3 Reduce the burden of proof for named parties to establish the limits of their liability.

Whether or not the Feb 2008 BPA is inclusive of Oroville operations, the Oroville Project appears to be targeted in one or more of the regional plans.

[BPA-5, paragraph 3] "CV dischargers in upstream tributaries to the Delta are not subject to the Delta Mercury Control Plan... but should consider participating in the Phase 1 studies."

Further consideration needs to be given to appropriately assigning responsibility. For example, while the Oroville Project passes water through its facilities, the sources of mercury loads originate from the tributaries upstream from the project. In fact, dams are known to trap sediment, and hence mercury. Will DWR need to conduct a long-term mercury monitoring program on source tributaries to document that the mercury load is from sources outside of the Project boundaries? If such a monitoring program firmly established that DWR does not control the source of the mercury loading, would DWR cease to be targeted as a discharger at that site? The burden of proof for regulated, but not necessarily responsible, parties is unreasonable.

Comment # WS4 Better delimit DWR responsibility on the Feather River.

Oroville reservoir management appears to ameliorate, not exacerbate, mercury conditions. Not only do reservoir operators appear to get no credit for mercury containment, DWR appears to be assigned responsibility for contamination outside its management area:

As described in the 8.4.3.3 of the Feb 2008 TMDL (p.173), one of the primary causes of the decrease in the sediment load of the Sacramento since the 1950s is believed to be the trapping of sediment in reservoirs. Based on this logic, Lake Oroville already collects sediment and likely serves as a mercury sink. It is unreasonable to assign DWR additional responsibility for contamination from upstream sources.

According to the 7th paragraph of Section 8.2 of the Feb 2008 TMDL, "Specific limits for the Feather River, American River, and Putah Creek watersheds are not defined... to allow for greater flexibility in developing future implementation strategies." When assigning limits, it should be noted that the Feather River Basin includes the Yuba and Bear rivers. These rivers join the Feather River at 39 and 55 river miles, respectively, downstream of the City of Oroville. The highest average levels of mercury contamination occur in the Bear River and South Yuba River watersheds. (Proceedings and Summary Report, Workshop on Assessing and Managing Mercury from Historic and Current Mining Activities. November 28 – 30, 2000, San Francisco, California

<http://www.epa.gov/nrmrl/pubs/625r04102/625r04102.pdf> Pg. 135)

Biota from the Feather River watershed above the confluences, and the American River watershed were considerably lower in mercury accumulation. (Alpers, Charles N. and Michael P. Hunerlach. Mercury Contamination from Historic Gold Mining in California. USGS Fact Sheet FS-061-00.

<http://ca.water.usgs.gov/mercury/fs06100.html>) When setting specific limits for the mercury load allocated to the Feather River Basin, it is not reasonable to assign DWR responsibility for all contamination in the Feather River downstream of Oroville Dam.

Comment # WS5 Individual Environmental Impact Reports will address potential mercury effects.

[TMDL Section 3.2 (p.24) and Section 8.4.3.3 (p.173)] In section 3.2 New Water Impoundments, the Draft TMDL Staff Report states that “new water impoundments have been found to stimulate sediment microbial activity and to increase methylmercury concentrations in sediment, water, and biota.” It then lists the five surface storage projects identified in the CALFED ROD.

However, in section 8.4.3.3, Decreasing Sediment Loads, the Draft TMDL Staff Report states that “the sediment load in the Sacramento River decreased by about 50% between 1957 and 2001,” and “[m]ercury loads are likely to have also decreased during the same period because much of the inorganic mercury is transported on sediment particles.” The report states that the trapping of sediment in reservoirs is believed to be one of the causes.

The surface storage projects under investigation by DWR have the potential to affect mercury and methylmercury levels in the Delta either positively or negatively. This will be addressed individually in the Environmental Impact Report for each project.

Comment # WS6 Make the Basin Plan flexible to balance project benefits and possible increases in mercury level.

[p.186] “The proposed Project requires that agencies that propose changes to the Yolo Bypass flood conveyance and other water management projects evaluate and minimize to the extent practicable any new methyl and total mercury impost resulting from the changes. Changes in flood conveyance and other water management projects could include new or modified weirs in the Yolo Bypass, new or expanded reservoirs upstream of the Delta, and changes in the *Central Valley Project – Operations Criteria and Plan, 30 June 2004* (CVP-OCAP) that result in alterations to the currently permitted water storage or release schedules (e.g., increased flows, flood frequency, or flood duration in the Yolo Bypass).”

Given the continuing decline of listed species and projected climate change effects on sea level rise and hydrologic conditions, changes to water management of the Delta are inevitable. There are several projects ready for construction or under consideration, including the South Delta Improvement Project, Franks Tract Project, and Delta Cross Channel Re-operations that would require changes to water management. Changes in operations can also result from court mandates or new biological opinions. The basin plan must accommodate some flexibility to achieve a balance between the project benefit

and possible increase in mercury level (especially when a proposed change is actually is a required action to protect listed species). Once in place, these actions and projects will require adaptive management programs and certainly will incorporate measures to minimize environmental impacts, including the influence on ambient mercury levels.

Comment # WS7 There are potential conflicts between existing TMDLs and the Proposed Project and corresponding TMDL. Example: SDIP

[p. BPA-11 paragraph 2] "Proponents of water management actions that could result in direct or indirect changes to sulfate concentrations in the Delta due to changes to the salinity objectives shall conduct studies to characterize baseline methylmercury production in open channels during different seasons and flow regimes prior to project completion.

If changes in the salinity objectives (or changes in flow management practices used to maintain current salinity objectives) would increase ambient methylmercury levels, then the project proponents shall 1) develop methylmercury control actions, 2) evaluate potential conflicts between methylmercury control actions and mandates for achieving salinity objectives, 3) document the inability to implement feasible methylmercury control actions if there is a conflict with meeting salinity objectives, and 4) implement those methylmercury control actions that do not conflict with the mandates."

No changes to the salinity objectives are proposed. However, as recognized above, there are potential conflicts between methylmercury control actions and mandates for achieving salinity objectives. Methylmercury control actions will also need to be balanced with other water quality parameters being imposed on the projects by water rights permits and fishery agencies.

As an example of potential conflicts, the proposed operations for the permanent operable gates under South Delta Improvement Program (SDIP) were conceived in part to address a TMDL for Low Dissolved Oxygen in the Stockton Deep Water Ship Channel. These operations would change water circulation in the south Delta such that instead of moving San Joaquin River water directly into the south Delta, more San Joaquin River water would move down through Stockton and into the central Delta. If, as suggested, San Joaquin River water is not desired in the Central Delta, then the Mercury TMDL may be in conflict with the Dissolved Oxygen TMDL. Construction of the permanent gates will provide the facilities to help address routing of water that is desired for the benefit of either TMDL. Operation needs to be decided upon the most degraded water quality situation and will need to be determined with input from all of the competing interests.

Cache Creek Settling Basin

Comment # CC1 CCSB is already part of the mercury solution – not the problem.

[p.71 last sentence] “The basin is the single largest source of mercury-contaminated sediment to the Delta.” This sentence is incorrect and misleading, and demonstrates the misplaced emphasis on the CCSB as a long term solution to sediment loading from this watershed. The upper Cache Creek watershed is the source of mercury-contaminated sediment to the Delta, not the CCSB. Without the CCSB, mercury laden sediment would migrate through the Yolo Bypass to the shallow water of the Delta, further exacerbating methylmercury issues. As is detailed elsewhere in the TMDL, the CCSB significantly reduces the transport of mercury-contaminated sediment to the Delta. Therefore, the CCSB, as constructed, is already acting as part of the solution to reducing total mercury loading to the Delta.

Comment # CC2 CCSB conditions described as baseline are inaccurate.

DWR does not share the CVRWQCB view of baseline conditions with respect to the CCSB, in terms of responsibility or feasibility as described by the Feb 2008 BPA. The mercury problem is from upstream sources. Increased excavation to maintain sediment trapping capacity entails additional management burden for DWR for which no funds are allocated. Management of sediment for mercury constitutes a different purpose than management for flood control. Any potential structural changes beyond accelerated sediment removal would require authorization by congress, the USACE, and potentially elusive local support.

Comment # CC3 Compliance dates for the CCSB are unrealistic.

Accommodate actual obstacles to CCSB changes by adjusting milestones and timeline.

Making changes to the CCSB is not as easy as the Feb 2008 BPA suggests. Technically desirable changes in the CCSB’s operation or management may be difficult to carry out for several reasons.

- Potential costs for raising the weir include the need to raise, reinforce and/or reconstruct levees upstream of the CCSB for public safety and property protection due to an increased backwater affect. (See Comment # CC5)
- Because management of sediment for mercury constitutes a different purpose than management for flood control, existing easements to enter and alter private land may not apply. Flood easements exist in the CCSB to allow operation and maintenance of the flood control project. Contrary to p. 73-74 of the Feb 2008 BPA, changes to the conditions for the CCSB, or accelerated activities may be outside the scope of the existing flood easements and thus require compensation to the property owners.
- Funding for the envisioned heightened operational requirements and/or physical improvements is not available in the maintenance budget for the CCSB, which is funded through the State’s General Fund. Obtaining

funding for such activities would require development, submittal, and successful Executive and Legislative approval of a proposed budget change from an appropriate funding source (2+years).

- Because the CCSB is a federally authorized project constructed solely for flood control purposes, changes to it that reduce its flood control benefits or add additional project purposes would require consent of the US Army Corps of Engineers and Congressional authorization. Such changes, if authorized, could not be implemented within the timelines specified. If such changes were mandated, there would be *at least* five years delay from such a mandate to obtaining funding and authorization, with additional time required for design and implementation.
- Difficulties in obtaining funds for studies or operational changes and with CEQA/NEPA or permits needed to change the CCSB could further delay any feasible implementation.
- Such changes would likely require broad local consensus, which has been difficult to develop recently for other flood control projects in the Woodland area.
- Considerable sediment characterization, sampling and analysis would be required to determine if the removed sediment would be considered inert, designated, or hazardous waste. If the total mercury concentrations in the sediment exceed threshold values, once removed, the sediment to be spoiled may require handling and disposal in a Class II surface impoundment, consistent with Title 27 of the California Code of Regulations, significantly increasing the cost of handling and disposal. Accelerated excavation could shift a potential problem from one area to another, with significant fiscal and environmental impact.

Comment # CC4 Do not carry forward and expand apparent inaccuracy regarding flood safety

[p.198 paragraph 2] “According to a USACE 1987 report, ‘...improvements to the CCSB done for the current project would not increase maximum water surface elevations upstream from the CCSB, even for end-of-project-life conditions.’ However the 1997 maintenance analysis by the Corps showed that dredging deposited sediment in the training channel would be necessary during the life of the project to maintain the design flood control capacity upstream of the CCSB. According to a 2003 quantitative geomorphic study conducted by the Corps (Corps of Engineers 2003), future training channel bed aggradation due to sedimentation could significantly reduce flow capacity upstream of the CCSB unless aggressive sediment and vegetation maintenance is conducted’ (CDM, 2004a, page 37)”

It is unclear from the quote whether the 1987 conclusion that the then-project-improvements would not increase maximum water surface elevations upstream of the CCSB applies to raising the outlet weir. Intuitively, and from a public perception perspective, raising the outlet weir would be expected to increase maximum water surface elevations upstream of the CCSB. Therefore it is

inappropriate to assume that DWR would proceed with raising the weir based on an interpretation of *draft* O&M manual language. Raising the outlet weir of the CCSB would constitute a Project, not just maintenance. Potential impacts to the City of Woodland would have to be considered and mitigated.

Comment # CC5 Re-evaluate erroneous assumption regarding relationship of storage capacity and outflow rate due to outlet weir elevation

p.198 paragraph 2] "...Therefore, the proposed Project would not increase the overall flooding potential for the upstream Cache Creek area, but would increase the number of years of exposure to increased flood risk by about three years. This risk could be mitigated by increased excavation in the basin to maintain its flood carrying capacity during the initial three years of the project."

Simply excavating the basin [changing storage capacity slightly] could not reasonably be expected to compensate for the presumably large change in the outflow hydrograph and upstream water surface level that would result from raising the outflow weir.

Dredging

Comment # D1 Strike the condition of ensuring return flow concentration

Condition 5 is too restrictive, stating a project should "ensure that return flows do not have methylmercury concentrations greater than the receiving water concentration". (Feb 2008 BPA, p. BPA-12.) Some level of dredging is unavoidable to maintain and increase desirable Delta channel flow capacities for water supply, navigation, and flood management as well as to maintain or improve Delta water quality (e.g., maintaining dissolved oxygen levels). The adoption of a TMDL that is too stringent could limit dredging in the Delta.

DWR has several projects that are planned or are being investigated that will require dredging, including dredging in the Mokelumne River to widen flood and conveyance pathways. There are several other projects under consideration, including the construction of new salvaged fish release sites, South Delta Improvement Project, Franks Tract Project, and Delta Cross Channel Re-operations. Highly restrictive TMDL requirements related to dredging may be prohibitively expensive putting these projects at risk and undermining the safety of Delta residents and the reliability of an adequate drinking water supply to 25 million people south of the Delta and agriculture productivity in the San Joaquin Valley.

The condition of ensuring return flow methylmercury concentration is too restrictive. If monitoring does show an increase, what can be done? It is not always practical to hold return flows indefinitely. Any requirement beyond reporting the discharge concentration would be prohibitive to most projects in the Delta.

Comment # D2 Strike or limit the direction to dredge until a horizon with lower mercury levels is exposed; it may not be feasible.

[p.102 -103] The language for how to deal with detected increases in *in situ* methylmercury after dredging describes options of dredging deeper, or waiting four months to allow natural sediment to cover the exposed surface, and if that doesn't work, dredging deeper. However, dredging until a horizon with lower mercury level is exposed may not be feasible.

Under existing conditions, and even more so, in the hoped-for scenario that successively transported sediment through the system will be more and more free of mercury, it may not be feasible to dredge to a sediment layer with lower mercury than the initial layer removed. There is a matter of unreasonable expense, and at some point, there may even be a risk of compromising levees. Please remove this requirement from the Basin Plan Amendment.

Comment # D3 Specify next steps if continued increased mercury methylation is detected during dredge monitoring.

[p. BPA-12 third paragraph] Condition 7 requires monitoring at dredge re-use sites to demonstrate that activities do not increase the bioavailability of mercury. For reasonableness, there should be a limit to the length of time this monitoring should be carried out.

Comment # D4 Specify the depth of sediment considered to be 'surface'

[p. BPA-11 paragraph 8] The Feb 2008 BPA instructs, "[c]onduct pre-dredge sediment coring to determine total mercury concentrations of surface sediment and buried sediment at the proposed dredge depth as required by the Executive Officer...." It is unclear from the text whether a single sample at the surface and a single sample at the total depth of the proposed dredge excavation at one boring location for the site are sufficient for characterization, or if some other unspecified sampling protocol is envisioned. Depending upon the dredge site conditions, and the required number and depths of sampling points, significant cost of characterization for proposed dredge projects may result. What access and response time for dredging direction can be expected from the Executive Officer?

[TMDL p.22 paragraph 2], "Maximum methylmercury production occurs at the oxic-anoxic boundary in sediment, usually several centimeters below the surface." In measuring the surface concentration, to what depth is considered "surface"? Perhaps concentration at some depth, rather than at the surface, should be the variable of interest for protocols.

Comment # D5 Reduce monitoring burden for annual maintenance dredging projects.

Annual maintenance dredging removes sediment deposited over the previous year to maintain the channel's depth. Deepening projects may expose older sediment with higher mercury concentrations. Annual maintenance dredging should have less stringent requirements than deepening projects.

Comment # D6 Offer offset credit for removal of mercury by dredging.

[p.BPA-11 final paragraph] "Characterize total mercury load and concentration of material removed from Delta waterways by dredging activities."

Entities that dredge will be penalized for increases in mercury or methylmercury due to dredging. Annual maintenance dredging projects remove material that is carried within the system and exposed to the water column as it is intermittently suspended during high water flows. Annual removal of this material may reduce total mercury in the system if it is placed upland (e.g., on the dry side of levees). Would DWR qualify for credits for this activity?

Comment # D7 Make requirement of preventing erosion realistic.

[p.BPA-12 bullet 6] The Feb 2008 BPA requires that "dredged material reused at upland sites, including the tops and backs of levees, is protected from erosion." Levees must be engineered and constructed to minimize erosion, and maintain

an appropriate land and water-side levee section. DWR, reclamation districts, and other local maintaining agencies are required to maintain levees to minimize erosion, and to allow inspectability and flood fight capability. Certain erosion protection (such as implementing storm water BMPs for constructed levees or allowing/requiring certain vegetation growth) is not appropriate or practical, and could risk public safety and federal emergency funding for flood control projects. Low levels of erosion on the land-side of levees should be exempt. Consider requiring erosion prevention techniques only when in unobstructed proximity to likely conveyance features such as channels or open water (i.e., consider presence of a levee between dredge source and dredge spoils to be a barrier under normal circumstances).

Comment # D8 Provide exemption for catastrophic levee failure.

[p.BPA-12 bullet 6] “. . . dredged material reused at upland sites, including the tops and backs of levees, is protected from erosion.”

Under most circumstances, placement of dredged material on the back sides of levees should be sufficient to prevent wetted contact. Dredge material that may be exposed to water in the event of catastrophic levee failure should be explicitly exempt, perhaps by language such as “dredged material reused at upland sites, including the tops and backs of levees, is protected from erosion into open waters under normal operational circumstances.”

Cost Estimations (Appendix C)

Comment # C1 Cost estimates appear to be extremely low.

Since development and evaluation of possible remediation methods for actually reducing mercury loads in the wide variety of geological and environmental settings has not been fully completed, any cost estimates for remediation provided in this document are preliminary and likely underestimate actual costs to implement future remediation actions to meet the proposed TMDL goals.

Comment # C2 Labor rates are low.

[p.C-4] Study design, data analysis, and report writing labor: \$100/hr

This may not be sufficient to include management labor or contract for private sector assistance

Comment # C3 False assumption of *DRAFT USACE O&M Manual* as baseline leads to unrealistically low cost estimate

[p.C-6 bullet 1, p.C-7, paragraph 1] Raising the basin's outlet weir in 2018 and excavation to maintain the USACE-design's 50% sediment trapping efficiency (by volume) is considered baseline

As stated on p.C-5, no program is in effect for the purpose of maintaining the trapping efficiency or extending the life of the basin beyond the USACE-designed project life of 50 years. In fact, no program beyond prudent management of the entrance to CCSB for flood control is in effect until DWR receives a final O&M manual from USACE. Actions that would constitute major modifications to the CCSB, such as raising the outlet weir or expanding the footprint would constitute new USACE Projects, despite their mention in the draft manual.

Comment # C4 Reconsider down-playing speculation of low mercury concentrations in sediment in the CCSB

[p.C-6, 4th paragraph] Because the sediment likely does not contain hazardous concentrations of mercury, the sediment could be used for building materials, landfill cover, or other construction projects."

Whether or not the sediment contains hazardous concentrations of mercury, it may still be considered designated waste, needing Class 2 surface impoundment if excavated.

Comment # C5 Cost estimates and timelines may falsely assume political support for the CCSB project.

[p.C-7, 2nd paragraph] "The total cost to raise the weir ranges from \$2.8 ... to \$6.0 million"

Raising the weir is not simply a matter of completing a relatively simple engineering project; obtaining local support, political support, congressional approval, etc. take additional resources.

Comment #C6 False assumption regarding CCSB flood risk leads to unrealistically low cost estimate

[p.C-7 last paragraph] "Additional excavation of the training channel by about 1 ft could offset the potential increase in flood risk from raising [the] weir three years early."

The operative word above is "could." The flood carrying capacity is affected by the overall storage capacity and the outlet conditions, as well as the inlet conditions. Thus, it might not be possible to compensate for changes in the height of the weir by excavation of the training channel at the entrance to the CCSB.

Comment # C7 Cost of acquiring new easements for CCSB underestimated

[p.C-8] "New easements for 1,500 acres could cost about \$2.9 million in 2007 dollars."

The cost of acquiring new easements is not just the apparent price tag, but the extensive staff time (planning, real estate, permitting, legal, management oversight), to achieve purchases. This cost could equal or exceed the price tag of the easements.

Comment # C8 Cost of sediment removal and disposal is low

[p.C-10] \$6-12 \$/cy, \$6 cy assuming that there would be a market for 50% of the sediment removed.

These cost estimates are reasonable only if disposal is on-site or very near by, and if the sediment does not turn out to be designated waste requiring Class 2 surface impoundment. The assumption of a permanent, local market for the sediment is not realistic.

Comment # C9 Cost estimate for characterization study is low

[p.C-10 final paragraph, C-12, C-13]

Cost estimates assume trained mercury handling and analysis staff available. If not, as is the case for DWR, there will be additional cost to hire or contract for expert study design, data analysis, and report writing labor.

Comment # C10 Gross underestimation of the cost of coordinating for agricultural studies

[p.C-34 first paragraph, and superscript a of table C.14] "The cost estimates below assume that responsible parties coordinate their efforts amongst each other and with agencies responsible for flooding in the Yolo Bypass." "(a) Staff assumed that modifying labor contracts and sampling plans, data analyses, report writing and other administrative tasks related to the addition of methylmercury analysis to the existing ILP monitoring program would require 60 hours...[and] the addition of new sampling locations... would require an additional 40 hours..."

[p.C-38, second paragraph] "The below cost estimates assume that responsible parties coordinate their efforts amongst each other."

For large agencies like DWR, the cost of establishing formal relationships with other entities, agreeing to a joint course of action, and causing money to change hands is not a trivial matter.

Comment # C11 Cost comparison with actual study illustrates consistent underestimation

[p.C-40 paragraph below bullets] Cost estimate for agricultural control study based on assumptions: \$290,000 to \$600,000. Scaled cost from actual study: \$613,000 to \$1.2 million.

Despite the disclaimer that the historical example study costs more because it involves more analyses, actual historical costs are more indicative of actual future costs. In addition, these costs likely refer to contracted costs, and do not include the additional labor costs to initiate that work and implement the contracts. This additional organizational cost would be borne by responsible parties seeking to implement studies associated with the proposed Basin Plan Amendments.

Comment # C12 The degree of analysis required for mercury far exceeds baseline analysis for new projects or changes in management of existing projects.

[p.C-44] A list of potential study questions and study tasks is furnished.

[p.C-45] "Task 1 [Hydrologic and geomorphic modeling of flow scenarios] would almost certainly take place for any proposed change to Yolo Bypass flood conveyance; therefore this is not expected to result in new modeling costs."

While hydrologic modeling would certainly be required, the resolution and degree of certainty about geomorphic conditions that is sought by the Feb 2008 BPA is much greater than that which might be required to make changes to Yolo Bypass structure or operations. There would likely be an assumption that general sediment-velocity relationships would apply, with an expectation of maintenance as needed for localized sediment deposits that might develop. It is therefore appropriate to consider water quality and geomorphic modeling at the level important to mercury processes (particle size fractions, bedload and suspended load sources, mercury characteristics of floodwaters) a new cost attributable to the Feb 2008 BPA.

Comment # C13 Inaccurate assumptions result in very low cost estimates

[p.C-46, 2nd and 3rd bullets] "Excavating the sediment costs about \$6 to \$12 per cubic yard. Administration effort would entail 160 hours per excavation event"

The excavation estimate will vary greatly with distance to disposal, being significantly higher as trucking costs are added in. Cost will also be driven up if special handling is required because the sediment is designated waste requiring Class 2 surface impoundment, or even hazardous waste. The estimation of administration effort required (project management, engineering design analysis, environmental coordination, surveys, real estate, construction management, etc.)

is two orders of magnitude low, based on recent DWR experience in sediment removal. Private entities that may not be held to the same fiscal reporting and environmental standards may be able to remove some portion of the sediment at a profit, but it seems unlikely that there would be sustained demand for it.

Comment # C14 It will be difficult to characterize the entire Yolo Bypass/Delta in time and space, and even harder to attribute change to specific projects or changes in operations.

[p.C-48 and following] refers to “the potentially-affected water body.”

The Delta is one large, highly variable water body comprising many smaller water body components, as well as managed lands. With so many things about the system changing in time due to inter-annual variability, climate change, development, hydrologic variability, tides, etc. it would be difficult to characterize the area and prescribe control measures – even with many sample sites.

Similarly, rules of thumb developed in laboratories, or at single sites, may not apply uniformly, or at all, across the Delta. It seems HIGHLY unlikely that methylmercury characterization and control studies could detect *and accurately explain* system-wide mercury and methylmercury changes could be accomplished for \$420,000 to \$640,000.

Comment # C15 Resources for study design, review and revision are underestimated.

[example: p.C-56 third bullet] “Study design, data analysis, report writing, and administration would entail 40 hours per mercury-enriched area...”

Is review and revision meant to fit into this 1-person 1-week allotment, too?

Comment # C16 There should be a sunset condition for increased monitoring triggered by increased methylmercury detection

[p.C-56] The bottom of p. C-56 regarding treatment of new wetlands constructed with dredge sediment refers to Section D.3. It is not clear to what this refers. D.4 on p. C-30?

Comment # C17 Who would bear the cost of source analysis for tributary watersheds?

[p.C-57 and C-58] Are these studies undertaken by the Central Valley Regional Water Control Board?

Comment # C18 Cost of working with other entities for risk reduction efforts is underestimated

[p.C-69, first paragraph] “CDPH, agencies proposing new wetland projects in the Delta/Yolo Bypass..., and NPDES permitted WWTPs and MS4s... need to develop and implement programs to reduce mercury related health risks... [They] need to work with affected communities, CDPH, OEHHA, and county health departments to develop a strategy for expanding and sustaining existing public education and outreach programs.”

[p.C-70, third paragraph] “The total program cost for expanded public outreach and organization is about \$390,000/year.” An example is given based on CALFED funding of the Fish Mercury Project.

For large agencies like DWR, the cost of establishing relationships with other entities, agreeing to a joint course of action, and causing money to change hands is nontrivial. Similarly, CALFED expended significant funds in advance of allotting \$968,931 to the CALFED Fish Mercury Project, and additional funds to manage the project once granted.

Corrections of Physical Fact

[TMDL p.12, final sentence]

Lisbon Weir limits drainage from upstream in the Yolo Bypass, and hence the vertical range of tidal fluctuation there. The upstream pool is used to supply irrigation water for lands to the north and west of Lisbon Weir. Tidal signals are reported into the Northern Yolo Bypass as defined by the TMDL.

[TMDL p.23, penult paragraph]

“...the water quality objectives for electrical conductivity (EC) and the ratio of San Joaquin River to Sacramento River water...are controllable water quality factors ~~and result from~~ affected by water management decisions made by the State of California, as well as....”

It is true that DWR water management decisions affect these factors, but they are affected by many other things, too (natural hydrology, tides, San Joaquin water management – affecting quantity and quality, operation of non-State-managed Sacramento River Basin reservoirs, federal pumping, local irrigator diversion, and other smaller influences.

[TMDL p.24, first paragraph]

“An indirect consequence of the permanent barriers is that their operation will ~~determine~~ affect sulfate concentrations in much of the central and southern Delta.”

As well as being mindful of the many factors that affect water quality in the Delta, it is worth noting that for many years, temporary barriers have operated in the Delta, placed and operating seasonally, somewhat similarly to how proposed permanent barriers may operate.

[TMDL Figure 6.4 p.84, Figure 6.6 p.93 and other maps]

The majority of southern Liberty Island, and the tips of Hastings Tract and Liberty Farms are open water. They are shown as land. A stair-step waterway similar to that north of Liberty Island connects the Toe Drain to Liberty Cut across the northern end of Little Holland Tract. See also p.99 of the BPA for reference to total acres of open water.

[BPA p.100]

Final paragraph. The Yolo Bypass was constructed as a floodwater conveyance system to concentrate and confine between levees flood flows that would otherwise flow around and through Sacramento and the surrounding area (inclusive of lands within the Yolo Bypass).

[p. BPA-21]

Appendix 43 states, “Table A43-1 lists the Sacramento-San Joaquin Delta waterways and the Yolo Bypass waterways within the Delta and north of the legal Delta boundary to which the site-specific methylmercury fish tissue objectives

and implementation program and monitoring provisions apply. The list contains distinct, readily identifiable water bodies within the boundaries of the “Legal” Delta (as defined in California Water Code section 12220) that are hydrologically connected by surface water flows (not including pumping) to the Sacramento and/or San Joaquin rivers.”

If, as described, the Delta waterways listed in Table A43-1 are intended to be limited to exclude waterways connected only by pumping, some of the waterways identified in Table A43-1 should be removed, including, but not limited to, Tomato Slough (Map Label #126), Jackson Slough (Map Label #57), Short Slough (Map Label #106), and Black Slough (Map Label # 9).

[p. BPA-22 to 25, Table A43-1, Figure A43-1 and Figure A43-2]

Tables and Figures should include Roosevelt Cut (on the northwestern side of Holland Tract) and Gallagher Slough (on the Southern side of Sherman Island). Figure A43-2 should identify Deuel Drain (Map Label #144).

[p. BPA-22, Table A43-1]

The table should be revised to identify Main Canal (Map Label #71) as a tributary of Indian Slough, not Italian Slough.

[p. BPA-23, Table A43-1]

The waterway labeled “Santa Fe Cut” (Map Label #101) should be relabeled as “Railroad Cut”.